

CLAIMS

1. A process for applying a coating on at least one main face of at least one optical lens which comprises the steps of:
 - subjecting said at least one main face to a corona discharge or atmospheric plasma treatment;
 - dipping the optical lens in a curable coating composition to deposit a layer of the curable coating composition on said at least one main face of the optical lens; and
 - curing the layer of curable coating composition to obtain a coated lens;wherein during the whole process the optical lens is carried by a same lens holder so that said at least one main face is freely accessible and without necessitating manual handling of the lens.
2. The process of claim 1, wherein the optical lens is carried by the same lens holder so that both main faces of the optical lens are freely accessible.
3. The process of claim 1, wherein the optical lens is maintained in the lens holder through its periphery.
4. The process of claim 3, wherein the optical lens is maintained through 2 or 4 contact points between its periphery and the lens holder.
5. The process of claim 1, wherein the optical lens holder comprises a support and a first and a second arm defining a lens holder general plane, first and second arms being relatively movable with regard to each other and each arm having spaced apart first and second end portions and an intermediate portion, the arms being mounted on the support through their first end portions and the second end portions of each arm adapted to accommodate an optical lens during use, whereby an optical lens can be maintained within the first and second arms with its optical axis orthogonal to the general plane of the lens holder through at least one contact point between the lens periphery and each of the first and second arms.
6. The process of claim 5, wherein the optical lens can be maintained within the first and second arms with its optical axis orthogonal to the general plane of the lens

holder through one or two contact points between the lens periphery and each of the first and second arms.

7. The process of claim 5, wherein at least the second end portion of each arm comprises a material having a dielectric constant at 1 MHz equal to or higher than the dielectric constant of the optical lens material.

8. The process of claim 7, wherein the material of the second end portion of each arm has a dielectric constant at 1 MHz of 3.0 or more.

9. The process of claim 7, wherein the material of the second end portion of each arm has a specific heat ($\text{kJ kg}^{-1} \text{K}^{-1}$) higher than the specific heat of the optical lens material.

10. The process of claim 9, wherein the material of the second end portion of each arm has a specific heat higher than $1.2 \text{ kJ kg}^{-1} \text{K}^{-1}$.

11. The process of claim 7, wherein the material of the second end portions of each arm is polyacrylonitrile-butadiene-styrene (ABS), polyoxymethylene homo and copolymers (POMH and POMC) cellulose acetate (CA), cellulose acetate butyrate (CAB), polyamides, polyetherimides (PEI), polymethylmethacrylates (PMMA) or polyaramides.

12. The process of claim 7, wherein the second end portion of each arm is either made of or covered with an electrically conductive material.

13. The process of claim 12, wherein the electrically conductive material is a metal.

14. The process of claim 13, wherein the metal is aluminum, stainless steel, copper, brass, or gold.

15. The process of claim 12, wherein the intermediate portion and first end portion of the arms are made of an electrically insulating material.

16. The process of claim 7, wherein the second end portion of each arm is thinner than the intermediate and first end portions in a direction orthogonal to the general plane of the lens holder.

17. The process of claim 16, wherein the thickness of the second end portion of each arm ranges from 2 mm to less than 13 mm.
18. The process of claim 17, wherein the thickness of the second end portion of each arm ranges from 2 mm to 10 mm.
19. The process of claim 5, wherein each of the second end portion of each arm adapted to accommodate an optical lens during use lens comprises a recess having a bottom wall and two inclined sidewalls.
20. The process of claim 19, wherein the inclined sidewalls form an angle of at least 120° with the bottom wall.
21. The process of claim 5, wherein the support comprises a pair of parallel rails, first and second arms being movable by translation on said pair of rails, relatively to each other.
22. The process of claim 5, wherein the second end portion of the second arm is provided with an additional portion adapted to accommodate an optical lens during use, and further comprising a third arm opposite to the first arm and lying in the lens holder general plane, relatively movable with regard to the second arm and having spaced apart first and second end portions and an intermediate portion, the third arm being mounted on the support through its first end portion and the second end portion of the third arm being provided with a portion adapted to accommodate an optical lens during use, whereby an additional lens can be maintained between the third arm and the second arm with its optical axis orthogonal to the general plane of the lens holder through at least one contact point between its periphery and each of the second arm and the third arm.
23. The process of claim 22, wherein the optical lens can be maintained within the first and second arms with its optical axis orthogonal to the general plane of the lens holder through one or two contact points between the lens periphery and each of the first and second arms.

24. The process of claim 22, wherein at least the second end portion of the third arm comprises a material having a dielectric strength of 1 MHz equal to or higher than the dielectric constant of the optical lens material.
25. The process of claim 24, wherein the material of the second end portion of each arm has a dielectric constant at 1 MHz of 3.0 or more.
26. The process of claim 24, wherein the material of the second end portion of each arm has a specific heat ($\text{kJ kg}^{-1} \text{K}^{-1}$) higher than the specific heat of the optical lens material.
27. The process of claim 24, wherein the material of the second end portion of each arm has a specific heat higher than $1.2 \text{ kJ kg}^{-1} \text{K}^{-1}$.
28. The process of claim 24, wherein the material of the second end portion of each arm is polyacrylonitrile-butadiene-styrene (ABS), polyoxymethylene homo and copolymers (POMH and POMC) cellulose acetate (CA), cellulose acetate butyrate (CAB), polyamides, polyetherimides (PEI), polymethylmethacrylates (PMMA) or polyaramides.
29. The process of claim 24, wherein the second end portion of each arm is either made of or covered with an electrically conductive material.
30. The process of claim 29, wherein the electrically conductive material is a metal.
31. The process of claim 30, wherein the metal is aluminum, stainless steel, copper, brass, or gold.
32. The process of claim 29, wherein the intermediate portion and first end portion of the arms are made of an electrically insulating material.
33. The process of claim 22, wherein the second end portion of each arm is thinner than the intermediate and first end portions in a direction orthogonal to the general plane of the lens holder.
34. The process of claim 33, wherein the thickness of the second end portion of each arm ranges from 2 mm to less than 13 mm.

35. The process of claim 34, wherein the thickness of the second end portion of each arm ranges from 2 mm to 10 mm.
36. The process of claim 21, wherein each of the second end portion of each arm adapted to accommodate an optical lens during use lens comprises a recess having a bottom wall and two inclined sidewalls.
37. The process of claim 36, wherein the inclined sidewalls form an angle of at least 120° with the bottom wall.
38. The process of claim 22, wherein the support comprises a pair of parallel rails, the first and third arms being movable by translation on said pair of rails.
39. The process of claim 5, wherein each of the second end portion of each arm adapted to accommodate an optical lens during use comprises two identical spaced apart tabs projecting perpendicularly from the first and second arms.
40. The process of claim 39, wherein each tab comprises a lens receiving notch at its free end.
41. The process of claim 39, wherein first and second arms are movable by translation on the support.
42. The process of claim 39, wherein first and second arms are elastically deformable.
43. The process of claim 39, wherein only the tabs are elastically deformable.
44. The process of claim 39, wherein the material of the second end portion of each arm has a dielectric constant at 1 MHz of 3.0 or more.
45. The process of claim 39, wherein the material of the second end portion of each arm has a specific heat ($\text{kJ kg}^{-1} \text{K}^{-1}$) higher than the specific heat of the optical lens material.
46. The process of claim 45, wherein the material of the second end portion of each arm has a specific heat higher than $1.2 \text{ kJ kg}^{-1} \text{K}^{-1}$.

47. The process of claim 39, wherein the material of the second end portion of each arm is polyacrylonitrile-butadiene-styrene (ABS), polyoxymethylene homo and copolymers (POMH and POMC) cellulose acetate (CA), cellulose acetate butyrate (CAB), polyamides, polyetherimides (PEI), polymethylmethacrylates (PMMA) or polyaramides.
48. The process of claim 39, wherein the second end portion of each arm is either made of or covered with an electrically conductive material.
49. The process of claim 48, wherein the electrically conductive material is a metal.
50. The process of claim 49, wherein the metal is aluminum, stainless steel, copper, brass, or gold.
51. The process of claim 48, wherein the intermediate portion and first end portion of the arms are made of an electrically insulating material.
52. The process of claim 39, wherein the second end portion of each arm is thinner than the intermediate and first end portions in a direction orthogonal to the general plane of the lens holder.
53. The process of claim 52, wherein the thickness of the second end portion of each arm ranges from 2 mm to less than 13 mm.
54. The process of claim 53, wherein the thickness of the second end portion of each arm ranges from 2 mm to 10 mm.
55. The process of claim 40; wherein the notch has the shape of a V.
56. The process of claim 55, wherein the angle of the V notch is 90° or more.
57. The process of claim 1, wherein treatment (a) is a corona discharge treatment with two corona heads oriented towards each other so that both main faces of the optical lens are almost simultaneously treated.
58. The process of claim 57, wherein the two corona heads are not in register to avoid electric arc between the heads.

59. The process of claim 57, wherein the lens is passed several times in front of each corona head and with a pause between each passage.

60. The process of claim 57, wherein each main face of the optical lens is submitted to the corona discharge for 1 minute or less.

61. The process of claim 1, wherein the treatment (a) is a corona discharge treatment with a single corona head and the lens holder is a rotatable lens holder whereby corona treatment of both main faces of the optical lens is accomplished successively by rotation of 180° of the lens holder.

62. A system for implementing a process for applying a coating on at least one main face of at least one optical lens which comprises a corona discharge or atmospheric plasma treatment device, a dip coating device containing a curable coating composition, a curing device, and a lens holder carrying a lens so that at least one main face of the lens is freely accessible, the system adapted to move the lens holder above each of the devices to bring the carried lens in an operating position within each of the devices and withdraw the lens from the operating position, whereby the whole process is effected without necessitating any manual handling of the lens.

63. The system of claim 62, comprising a corona discharge treatment device and wherein the lens holder carries said at least one lens so that both main faces of lens are freely accessible.

64. The system of claim 62, wherein the lens holder carries two lenses.